

CLAIMS

Claims 1-31 (canceled)

Claim 32 (new): A composite comprising a sandwich structure comprising at least two surface layers attached to a central layer of rigid epoxy foam wherein the layer of epoxy foam is at least 1.5 times the combined thickness of the two surface layers and the foam has a density of from 0.2 to 1.5 gram/cc.

Claim 33 (new): A composite according to claim 1 in which the foam has a density of between 0.4 and 1.5 gram/cc.

Claim 34 (new): A composite according to claim 1 in which the surface layers are of metal foil such as aluminium or steel foil, plastic film or sheeting such as polypropylene or polyethylene film or polyethylene terephthalate film

Claim 35 (new): A composite according to claim 1 in which the surface layers are porous fibrous or both.

Claim 36 (new): A composite according to claim 1 in which the surface layers are fibrous and the fibres are carbon fibre, glass fibre or Kevlar.

Claim 37 (new): A composite according to claim 1 in which the surface layers are matching internal and external structures.

Claim 38 (new): A composite according to claim 6 in which the surface layers are hollow box sections or tubes.

Claim 39 (new): A composite according to claim 6 in which the surface layers are concentric tubes.

Claim 40 (new): A composite according to claim 1 in which the surface layers are of a metal that includes aluminium.

Claim 41 (new): A composite according to claim 1 in which the surface layers are of different materials.

Claim 42 (new): A composite according to claim 1 in which the composite is part of a construction building or a transportation vehicle.

Claim 43 (new): A composite according to claim 11 in which the composite is configured to provide reinforcement against crash in vehicles.

Claim 44 (new): A composite according to claim 12 in which the composite is configured to provide automobile door reinforcement.

Claim 45 (new): A composite according to claim 13 in which the composite is configured to provide strength in a sporting goods.

Claim 46 (new): A composite comprising a sandwich structure comprising at least two surface layers attached to a central layer of rigid epoxy foam wherein the layer of epoxy foam is at least 1.5 times the combined thickness of the two surface layers and the foam has a density of from 0.3 to 0.6 gram/cc, wherein:

- i. each of the at least two surface layers has a thickness of from 0.2 to 10 millimetres and the central layer of a rigid epoxy foam has a thickness of from 2 to 200 millimetres;

- ii. the composite has a flexural modulus as measured by ASTM D790/ISO 178 from 200 mPa to 700 mPa; and
- iii. the composite has a density of from 0.1 to 1 gram/cc.

Claim 47 (new): A composite according to claim 15 in which the surface layers are of metal foil such as aluminium or steel foil, plastic film or sheeting such as polypropylene or polyethylene film or polyethylene terephthalate film.

Claim 48 (new): A composite according to claim 15 in which the surface layers are porous fibrous or both.

Claim 49 (new): A composite according to claim 15 in which the surface layers are matching internal and external structures and the surface layers are hollow box sections or tubes.

Claim 50 (new): A process for the production of composite materials comprising either:

- i. providing a first surface layer, laying a layer of heat activatable foamable epoxy material thereon and providing a second surface layer on the surface of the layer of heat activatable foamable epoxy material remote from the first layer of fibrous material and heat activating the epoxy material so that it foams and bonds to the surface layers; or
- ii. spraying a foamable epoxy material between two surface layers and allowing the foamable material to expand and cure and bond to the surface layers.

Claim 51 (new): A process according to claim 19 in which one or any combination of the following:

- i. the surface layers are porous and are coated and/or impregnated with an epoxy material;
- ii. the epoxy material is compatible with the heat activatable foamable epoxy material;
- iii. the epoxy material cures under the same conditions as the heat activatable material cures;
- iv. the porous layers are coated and/or impregnated with the same epoxy material as forms the basis for the heat activated foamable material;
- v. the first surface layer is the outer surface of the inner component of matching structures;
- vi. the first surface layer is the outer surface of the inner of two concentric tubes and the second surface is the inner surface of the outer tube;
- vii. the first surface is the outer surface of an inner box section and the second surface is the inner surface of an outer box section; or
- viii. the matching structures are held apart to allow the foaming of the epoxy material.